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LAST OF AN ERA

Combat Crew

strategic air command

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MARCH 1990
★★★★

Combat Crew

Magazine of the Strategic Air Command—40th Year of Publication

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On Our Cover

Combat Crew salutes the SR-71 Blackbird upon its official retirement. Its capability to go faster and higher excites the imagination of all who love flying.

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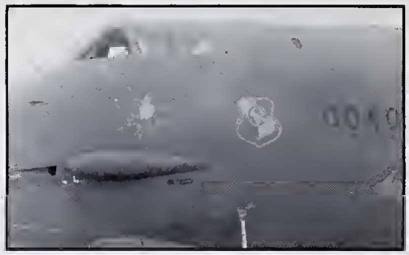

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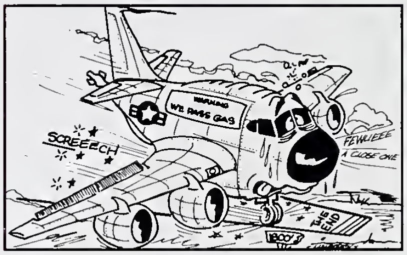

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From the Editor's Desk

We can't be satisfied that our efforts are "good enough" and hope someone else finishes the job. Responsibility in Safety means personally seeing the mission all the way through to the end. It's tough, but it's the critical part of our job.

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From the CINCSAC

I want to talk to you a moment about responsibility. To set the stage I want to tell you a true story that happened to me last fall. I was flying in one of our SAC aircraft, obviously with a very talented crew. As we flew along and I discussed a myriad of subjects with the instructor pilot, I asked about the new OES system and what his reaction was to it. Then I asked him about the feedback system and, since he was an aircraft commander, how he went about doing it and whether he felt properly trained to be able to conduct a feedback session. The answer I received was not what I was expecting.

He thought that he could conduct a feedback session but he had a major problem. His problem was he had a crew working for him and the Base Personnel Office did not always notify him when the feedback session was required. To say that I was "taken back" would be a gross understatement.

Here was a guy who had very important SAC people for whom he had **RESPONSIBILITY.** Part of that responsibility was to see that the very important report card was filled out properly, timely, and with a lot of deep thought. Additionally he had the responsiblity to see that his troops were properly counseled periodically. For him to tell me that he was relying solely on the DP to tell him when those were due was irresponsible. The DP's reminder might be a nice helpful hint but any aircraft commander that can't manage, lead, plan ahead, and accept the responsibility for his crew shouldn't be an aircraft commander or in any other leadership position. If that officer didn't accept the responsibility for taking care of his crew, then how the hell can I expect him to accept responsibility for the aircraft or anything else we entrust him with?

The first order of responsibility for an Air Force officer or enlisted person is to assume full responsibility for his or her own actions. The second order of responsibility is to assume responsibility for everyone who works for him or her.

Everyone needs to know clearly what they are responsible for as an individual, and as a member of a larger team – and not be reliant on outside aids to help you fulfill your responsibility.

Seeking responsibility and then carrying out these new obligations is what separates the outstanding from the average.

I feel very stongly about this subject. I believe that accepting responsibility and self-discipline are two of the fundamentals that help separate the military establishment from the rest of society.

GENERAL JOHN T. CHAIN, JR.
COMMANDER IN CHIEF
STRATEGIC AIR COMMAND

I am proud to be CINCSAC, I am proud of the responsibility that has been entrusted to me, and I accept it fully. I hope that every member of the Strategic Air Command renews their acceptance of personal responsibility and for team responsibility. If we do we will be an even **stronger command** in the future than we are today. ★★★★

Black Widow's Final Flight

1Lt Gregory C. Smith
K.I. Sawyer AFB

Aren't you tired of stories that invariably begin, "The flight began as a normal night mission. Little did we know what was in store for us in only a few hours..." Still, this is the short saga of one such average nine hour K.I. Sawyer B-52 flight that ended up being the final flight of the Black Widow (60-040) and some of its crew.

The sortie consisted of an early evening takeoff, night air refueling, two hours of mountainous low level in the strategic training range complex, an hour and a half drone home, and another hour or so of touch and go's. Generally, everything was uneventful. Strong low level winds kept us at IFR altitudes for a short while but subsided, enabling us to descend to terrain avoidance (TA) altitudes before reaching the first bomb run. Clear weather dominated the entire flight, the stars shining brightly across the whole Midwest.

We returned to the local radar pattern where I flew the first approach and the aircraft commander flew the second. On downwind, I climbed out of the right seat and sat down at the tenth man position (facing backwards on the floor behind the IP's seat). The other pilot climbed into my vacated seat and flew what would be that airframe's last touch and go. The approach was steady and the landing superb. Seconds later the airplane shuddered, pitching downward as an explosion erupted in the aft fuselage. Instantaneous thoughts of disbelief and confusion sped through my mind as we slammed into the ground at an estimated 23 g's. In another instant we lay motionless with gear and equipment strewn about, only visible by the blaze which roared through the rear bulkhead. The EW and gunner's panel had been pushed in on them and a gaping hold was ripped open above them with flames leaping into the crew cabin. Still leaning against the tenth man hammock, pubs cases and divert kit bags covered me. The communication kit, which was laying unsecured in the bunk, had also hit me in the head. The impact broke my mask and helmet, slicing my chin.

Thinking the cockpit was still attached to the airplane, I realized that the forward body fuel tank could explode at any moment. I released myself from the parachute and crawled up to the IP's seat. I couldn't see the pilots very well as thick smoke filled the cockpit. The only light was that from the nearby alert facility. Shouting to the pilots, I asked them if they were okay and could get their windows open. I received a no to both questions.

Barely able to breath now from the suffocating, toxic vapors, I turned back toward the defense compartment where the flames were subsiding as water and foam began to pour in from the fire department hoses. Rapid coordination between the tower and the fire department had resulted in an incredible, lifesaving response time. I pulled my t-shirt over my nose and mouth to filter the air and began to help free other crew members from the torn wreckage. Seeing the torn hold in the fuselage as our only escape, I climbed up through the torn metal and waved to the fire department to begin the rescue from the EW's hatch. Climbing back into the airplane, the radar navigator and I worked to free the pinned EW and then threw an escape rope out the opening. Then, in spite of the gunner and RN having broken legs, they both managed to climb out of the hatch and down the rear of the severed crew compartment.

We worked for several more minutes to safe the defense compartment ejection hatches and remove the EW and navigator. The EW had a badly broken right leg along with severe leg and facial cuts and breaks. A sling was lowered and firemen were able to hoist him straight up out of his seat. Next, the navigator had to be lifted out in a similar fashion, both ankles having been crushed in the initial impact.

With the main part of the fire at bay, the fire department was able to take its time using the EW and copilot's hatches to complete the rescue. Careful work with back boards enabled the firemen to safely extract the other three pilots without further injury. All three had in fact sustained serious spinal injuries in the crash.

Several things can be learned from this violent and potentially fatal accident. Most importantly, you as a crew member must know your aircraft's safety equipment, its location and how to use it. Periodically go over the locations of each fire extinguisher on the airplane. Know its limitations. Don't forget where the crash axe is and where you might be able to use it. Take some free moments occasionally to look over hatches, doors and windows assuring yourself that you could get them open if it's dark and the airframe is slightly twisted. Before flight, strapping down the communications kit and other heavy or bulky equipment to the defense instructor's position or another secure place is imperative.

That night, as I worked to get out of the aircraft, nearly suffocating, it did not even cross my mind to grab a portable oxygen bottle or hook back up to the emergency bottle on my parachute. I also did not know the location of my flashlight. Obviously, it had been thrown about upon impact, but having my small maglite handy in a pocket would have made a world of difference in such darkness. I was very fortunate that the crew compartment didn't roll after we separated from the rest of the aircraft. If we had rolled, my injuries could have been much more serious. A seat belt really is a piece of safety equipment, so don't neglect to use it at all times.

Finally, it is important to think of those unimaginable scenarios to reinforce your basic knowledge of an aircraft's emergency equipment. Chair fly a few of your own and then do the same as an entire crew. Go over air and ground situations concentrating on crew coordination.

Don't always think, "It'll never happen to me." It can happen. Please be prepared if the time comes because you **can** survive a serious aircraft mishap. **Fly smart, fly safe!**

A Leaking Tank(er)

1Lt Jerry Martinez
340 AREFW, Altus

When we showed up at the tanker task force unit that morning, we thought we were headed home to Altus after 35 days of TDY. We loaded our gear as the AC, Capt. Carter Jordan, put the finishing touches on the outprocessing checklist. We accomplished a normal preflight and waited for our 17 passengers to show up. After the passengers arrived, the IBO, Sgt. Mark Miller, gave an excellent briefing on all required procedures for the flight. He had no idea at the time that his passengers would soon be following the evacuation procedures he was briefing. We launched about six a.m., so it was still dark. Our mission was to drag two F-15's to Hickam and eventually go home to Altus.

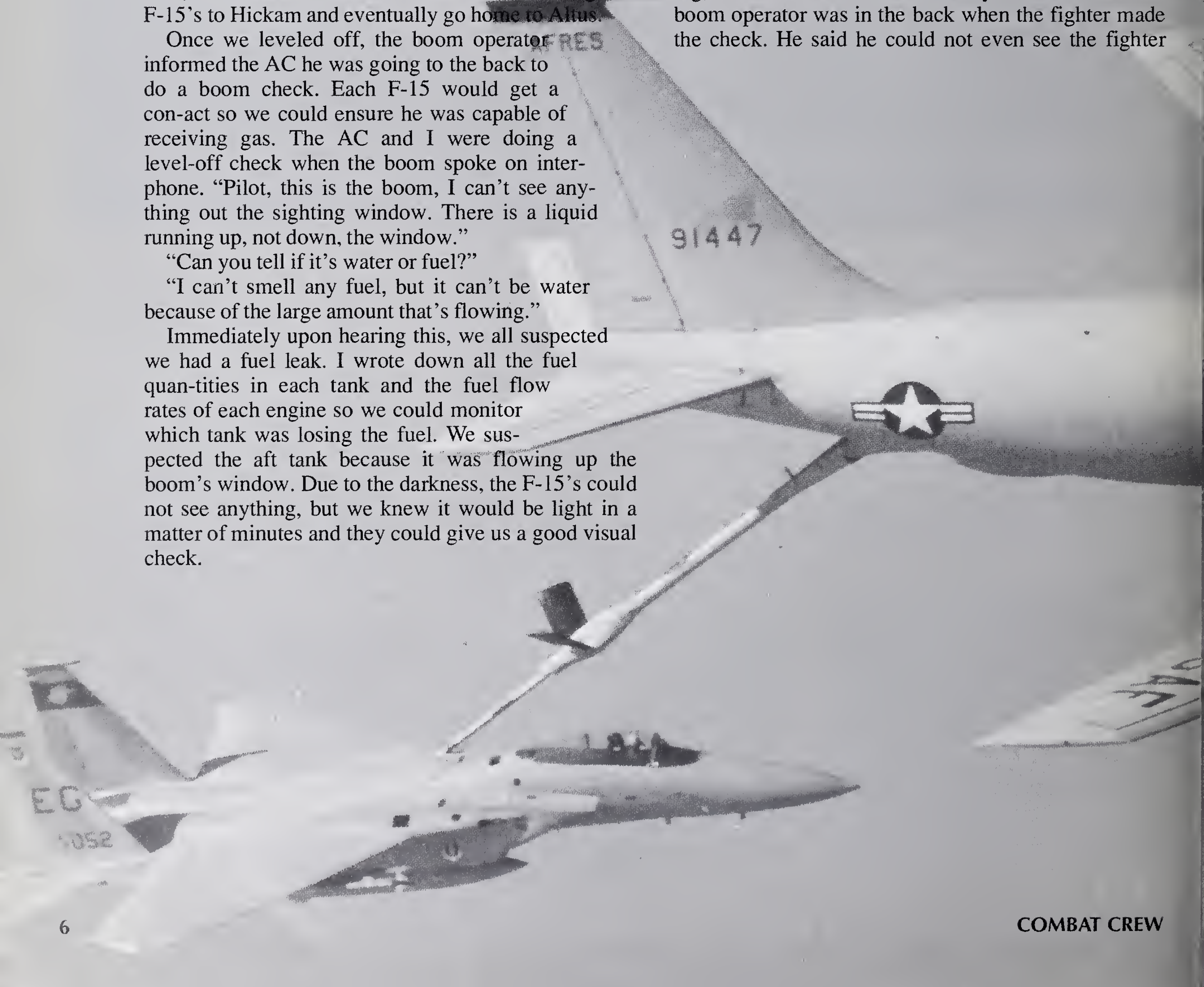
Once we leveled off, the boom operator informed the AC he was going to the back to do a boom check. Each F-15 would get a con-act so we could ensure he was capable of receiving gas. The AC and I were doing a level-off check when the boom spoke on interphone. "Pilot, this is the boom, I can't see anything out the sighting window. There is a liquid running up, not down, the window."

"Can you tell if it's water or fuel?"

"I can't smell any fuel, but it can't be water because of the large amount that's flowing."

Immediately upon hearing this, we all suspected we had a fuel leak. I wrote down all the fuel quan-tities in each tank and the fuel flow rates of each engine so we could monitor which tank was losing the fuel. We suspected the aft tank because it was flowing up the boom's window. Due to the darkness, the F-15's could not see anything, but we knew it would be light in a matter of minutes and they could give us a good visual check.

The IN, Capt. Jim Tucker, notified the Andersen Command Post that we were turning around and heading back to Guam. He also advised them that we would have to dump fuel to get below our allowable landing gross weight. A few years prior to this, a tanker exploded during the landing roll at Altus due to escaping fuel vapors. This was in the back of all our minds; thus, we wanted to dump fuel, land and get off this airplane. As the sun came over the horizon, one of the F-15's gave us a good check and confirmed a large amount of fuel streaming from the jet. Once the F-15 gave us the location from where the fuel was streaming, we were sure it was an aft body tank fuel leak. The boom operator was in the back when the fighter made the check. He said he could not even see the fighter



through the window because there was so much fuel leaking out.

At this point of the flight, things got very busy. We accomplished all checklist procedures for a suspected body tank leak. We turned off the appropriate equipment and began preparing for the landing back at Guam. The boom operator informed the passengers of the problem once all of the checklist items were complete. We figured how much fuel to dump to get to a landing gross weight, and once cleared by the appropriate agencies, we dumped the fuel. The crew experience level really began to show. The navigator and I talked to the center and command post, while the boom operator and the crew chiefs discussed the evacuation procedures for the passengers. The AC insured the jet was safely being flown.

After discussing the situation with the passengers, the boom operator concluded that if there was no fire on landing roll, all passengers were capable of a controlled exit through the crew entry chute. If tower reported any smoke or fire to us, I was going to ring the alarm bell and the boom operator and crew chiefs, one stationed at each hatch, would immediately evacuate the passengers out the hatches. We coordinated through tower, command post and bravo (who was listening on 311.0) to turn off at the end of the runway, shut down and evacuate. The landing was normal and tower reported they saw no smoke or fire. We turned off at the end of the runway, and being careful not to be hit by responding fire vehicles, abandoned the aircraft. All the passengers went first followed by the crew.

In this emergency, crew coordination was a necessity. With all crew members being high time in their position, the IFE was handled very smoothly. Good solid mission planning and the discussion of each crew member's responsibility during an emergency is a definite plus. It helped us in everything from radio communications to aircraft evacuation. Remember to always fly the aircraft first, then handle the problem. **Fly Smart, Fly Safe!**

The First One

Capt Michael Gee
305 AREFW, Grissom AFB

Very recently, my crew and I departed Grissom AFB, Indiana, on a local night training mission. We were all looking forward to the flight as I was a young aircraft commander and we had never flown an integral crew sortie before. The mission profile was standard: air refueling with a KC-135 RT from our base, abbreviated navigation leg, and best of all, transition. Total flight time of the crew was just over 4500 hours evenly distributed among crew members. We all felt confident in our own capabilities as well as each others. In the back of my mind I thought, "Maybe something out of the ordinary will happen and we'll see how well we can handle it."

Other than the normal takeoff data changes and minor maintenance repairs, this sortie was going to be "one of the same." The takeoff and climbout were uneventful and cocky self-assurance started to set in. The one and one-half hours of air refueling were without incident. In fact, the pilot and I were quite pleased with our autopilot off platform and the crew performance.

Following air refueling, we got ready for our nav leg. Normally nav legs are perfect for in-flight munchies and a chance to catch your breath. But something inside kept reminding me; "I am now the aircraft commander, so I can't ease up too much." I've read enough Combat Crew articles where individuals relaxed just enough to miss obvious discrepancies. Besides, as a pilot I was constantly doing something during all phases of flight, so why stop now?

The first half of the nav leg went as smoothly as planned. Our navigator never strayed more than five miles from centerline. After obtaining altitude clearance for the turn to home, we climbed and initiated a turn eastbound. I'm not sure when I could have noticed the loss of right hydraulic fluid, but it was obvious now. The two and one-half gallons on the gage were a glaring discrepancy to both the pilot and myself. The pilot quickly referenced the Dash One while I alerted the crew. Since we were home station bound already, I saw no need to tell anyone else anything yet. Then, I remembered there was quite a bit of knowledge and experience in the receiver KC-135 we had recently refueled. We followed Dash One procedures, computed landing data, and attempted radio contact with our former receiver, which had our squadron commander on board. By the time we made UHF contact, the hydraulic fluid quantity was below two gallons. After a couple of attempts to isolate the leak, the quantity was below one gallon. I recalled my earlier thoughts of hoping something would happen so I could earn my pay and prove my abilities. Now, I wasn't so sure.

While talking with the squadron commander on UHF, command post just happened to hear the tail end of our conversation. I had planned on contacting them after we had all our ducks in line. So for the next one-half hour, we repeated our "Please Standby" call several times, since I needed the time to insure we "Looked Good." Our navigator completed his nav leg and we pressed on towards the initial approach fix. By this time I was sure the Hotel Conference was in motion and the DO would want to hear some specifics. I was wondering how I was going to explain why we finished the nav leg after the loss of the right hydraulic system fluid and its associated equipment.

We delayed giving command post a call with all the data we thought they would want, because I have learned that an important aspect of an emergency is handling all the necessary details over the interphone and maintaining a sense of mind. We finally gave control our landing data, which made the pilot a bit uneasy after learning that a stan eval pilot was cross-checking his computations.

So there we were; our first integral crew sortie, my first inflight emergency as an aircraft commander, and I was worried about "filling the squares" with everyone on the ground and the pilot wondering if he would be signing a form 8 the next morning for landing data errors. We decided to fly final at three engine inflight minimum control speed, rudder power inop, as an extra margin of safety. The navigator manually cranked the flaps to 30 degrees and we penetrated. Final approach speed was 166 KIAS, 30 knots above the normal 30 degrees flap approach speed. Due to the 15 knot crosswind and RCR of 12, the pucker factor was high. I decided to have the pilot pull the power at my direction, and I would worry about the final approach and landing. All went as planned and we landed, stopped and shut down on the runway.

You're probably thinking the same thing I am right now; this was an easy emergency to handle and not really any big deal, but when you're the individual signing for the aircraft, a rookie in the left seat, and running a crew on top of that, you contemplate your actions a bit more seriously.

There's no moral to this story, and no learned techniques from the incident but for me, I realized that the chance of experiencing an inflight emergency which the Dash One doesn't cover is remote. Furthermore, I finally realized that if the wing commander has enough confidence in me to allow me to sign for one of his aircraft, I should feel confident in my own abilities. So if there's anything to pass on, it's this: Know and follow your Dash One procedures, believe in yourself and in your abilities. Uncle Sam does. **Fly Smart, Fly Safe!**

POOR JUDGMENT BEHAVIOR CHAIN

MSgt Gene Bouler
68 AREFW, Seymour Johnson

Most aircraft incidents and accidents result from a combination of circumstances rather than from a single cause. Although we often focus on a primary factor, in reality, incidents and accidents are the result of a chain of causes involving a variety of crew-aircraft-environment factors. These occur as a series of errors in judgment we could call **the poor judgment behavior chain.**

If you've been flying for any length of time, you have probably found yourself in predicaments that could be traced back to an initial error in judgment. Fortunately, you have survived and learned while others may not have been as fortunate. See if you see anything familiar in the following scenario extracted from a combination of actual experiences.

A KC-10 flight crew departed Rhein-Main Air Base, Germany, for Dover AFB, Delaware, on a typical MAC channel mission. Both radar systems were unreliable; however, the aircraft commander elected to fly the mission without radar despite forecast IFR conditions on the east coast. Flight was planned at FL 410 and fuel loading was based on those computations. Anticipating a pleasant homecoming in time for the holidays, the crew confidently proceeded on their mission. About an hour after coast-out, the flight engineer determined their extended flight at FL 310 had resulted in a significantly degraded fuel burn compared to the planned flight at FL 410. The AC was confident they would be cleared shortly to climb to FL 410 and elected to continue. When oceanic air traffic controllers restricted their flight to lower altitudes due to traffic conflict, the AC still elected to continue assuming he would eventually be cleared to climb without affecting arrival fuel minimums. No climb clearance was forthcoming since traffic happened to be going the same direction, which was unknown to the crew.

Approaching coast-in, fuel computations looked good to land within legal limits. But just as forecast, a line of weather stretched from New York to Florida making arrival challenging to say the least. With weather radar inoperative, weather avoidance vectors were received from ARTCC. Before long, they found themselves far north of course but fortunately had received a climb to FL 410. Just when they thought their troubles were over they found themselves penetrating an embedded thunderstorm. Altitude fluctuated between plus or minus 3000 feet and bank angle from 45 to 60 degrees, left and right. Hail pounded the fuselage until eventually they popped out on the other side.

You can imagine the quiet in the cockpit as the crew collected their wits. Just as the excitement began to subside, the aircraft began shaking and buffeting with no apparent malfunction noted. Airspeed was 250 KIAS and Mach was .832 but the power seemed a little low. The buffeting got worse. The crew scanned the wings for damage. There was no damage but ailerons were fluttering. The crew suspected the aircraft was in a stall and the backup airspeed indicator confirmed their suspicions – 190 KIAS. The AC then initiated stall recovery. During recovery, the crew allowed the engines to overboost causing turbine damage on one engine. Then another engine flamed out due to fuel starvation. Fortunately, there was enough fuel to safely land. Later analysis determined pitot-static system icing was the straw that broke the camel's back. Fortunately, this was the final link in this poor judgment behavior chain.

It's easy to Monday morning quarterback this one but there are several important lessons we can glean from the experience. The chain began with the age old crew affliction –get-home-itis! Getting home overrode their concern for safe oceanic crossing (no weather radar). Mission planning assumptions were flawed. Successful crossing depended on clearance to fly at the planned FL 410. Adequate fuel reserve for any other altitude was not available. The crew failed to ascertain the line of weather was moving in their direction and no fuel consideration was made for thunderstorm avoidance vectors.

Disastrous results need not be a foregone conclusion in a poor judgment behavior chain. A crew can break the chain anytime. This crew did not. You probably made your own decisions how you would have handled this predicament, but in the future, when you find yourself starting a poor judgment behavior chain, the following principles may help you avoid its pitfalls and break the chain:

– One poor decision increases the probability that another will follow: judgments are based on information the crew members have about themselves, the aircraft and the environment. Poor judgment is less likely if crew information is accurate. One poor decision advances the importance of false information which may then negatively influence judgments that follow.

– As the poor judgment chain grows, the alternatives for safe flight decrease. When we choose an alternative in flight, it means all other alternatives are lost: the road not taken. When the crew elects to fly into hazardous weather, the alternative to circumnavigate is automatically lost.

Crew judgment is a mental process that results from discipline and training. Here are six steps to help you break a poor judgment chain:

1. Recognize poor judgment by getting feedback. Don't be afraid to admit an error. To recognize an error, you need to elicit feedback from all crewmembers. Keep the lines of communication open on the flight deck. Don't let pride be the death of you.

2. Be alert to crew stress. High stress and anxiety can dull our sensitivity to our own errors. Take direct action to eliminate or at least decrease crew stress.

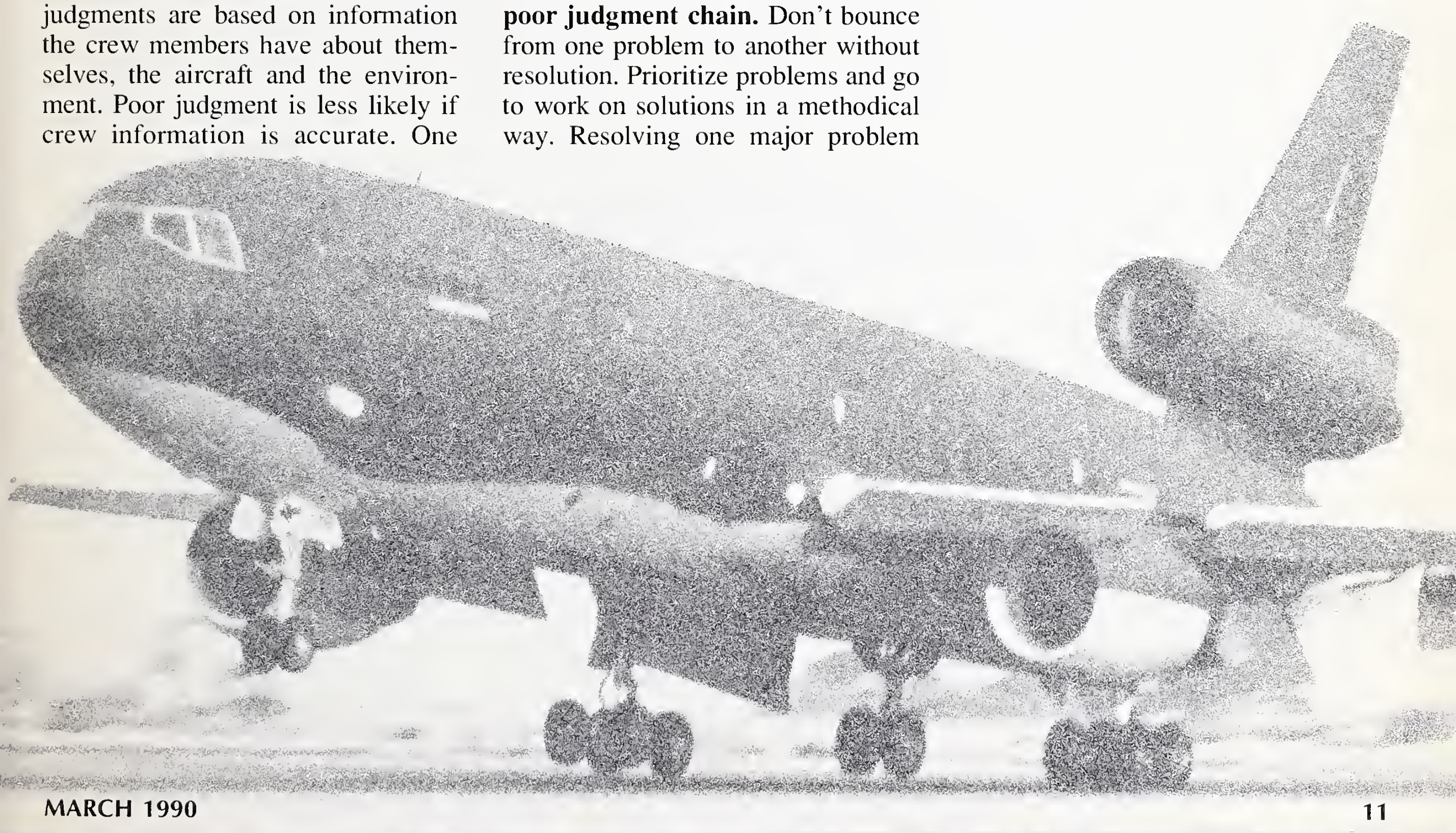
3. Remember to resolve problems that may have been initiated by a poor judgment chain. Don't bounce from one problem to another without resolution. Prioritize problems and go to work on solutions in a methodical way. Resolving one major problem may make several smaller ones go away.

4. Search for other poor decisions. Remember, they tend to occur in multiples. When a poor judgment is determined, look for associated effects. If other choices were based on an early mistake, it won't take long to figure out how deep you're in. You can't always backtrack, but searching for a way out becomes a priority.

5. After you break a poor judgment chain, review it. This is usually best done after landing. Review and critique can help a crew avoid similar poor judgments in the future.

6. Plan ahead. Surprisingly, most poor judgment chains occur when prior planning did not. Be prepared for the worst and enjoy the tranquil moments with a jaundiced eye. Booby traps usually lay ahead.

As astronaut Frank Borman once said, "A superior pilot uses his superior judgment to avoid those situations which require the use of his superior skill." Happy flying! **Fly Smart, Fly Safe.**



The SAC Crew Resource Management Program

Maj Don Mill
HQ SAC/DOSP

Crew Coordination. This term has been a part of SAC terminology since the command came into existence in 1947. In a few brief sentences, the flight manuals describe crew coordination as "complete familiarity with one's crew position and a working knowledge of the other crewmembers' duties." Not surprisingly, the traditional focus of crew coordination training has been on the execution of nondiscretionary activities such as checklists, emergency procedures and operating instructions. As far back as 1957, however, an Air Force study of crew coordination notes that, "there is no assurance that the training of crew members in their individual specialities alone, regardless of how thorough, will produce an effective crew. Other skills may be necessary, skills that reflect the ability of the individual specialist to work together with the other crew members in an efficient manner." The "other skills" alluded to in the above quote comprise what are commonly called crew resource management (CRM) skills and these skills are equal in importance to technical skills, both in terms of their influence on crew safety and on mission effectiveness.

SACs theme for 1990 is The Year of Reviewing Fundamentals. In the coming months this corner of Combat Crew will focus on fundamental aspects of CRM. Various topics presented here will include managing human error, leadership, communication, situational awareness and critique. In addition we will frequently present the CRM perspective on actual crew situations.

All of this emphasis on awareness of CRM is in preparation for implementation this year of a CRM program tailored specifically for each SAC aircraft type and mission flown. Some of you may have talked with the CRM development team during their visits to your SAC base. However, whether you discussed CRM with the team or not, we invite you to share with us those "actual crew situations" for the upcoming articles in CRM Corner.

Your input is a fundamental part of building a program to get SAC crews flying smarter.

Capt Frank A. Dietz
380 BMW, Plattsburgh AFB

From the dawn of time, man has watched the soaring birds. From then until fairly recently, he has wondered over his own inability and failure to duplicate avian aerial feats. Throughout the centuries, investigations and experiments have centered on the mechanical and technical reasons for man's failure in flight. Even today, most of the Federal Aviation Administration's (FAA) investigations into airliner crashes reveal mechanical causes which often lead to technological advancements.

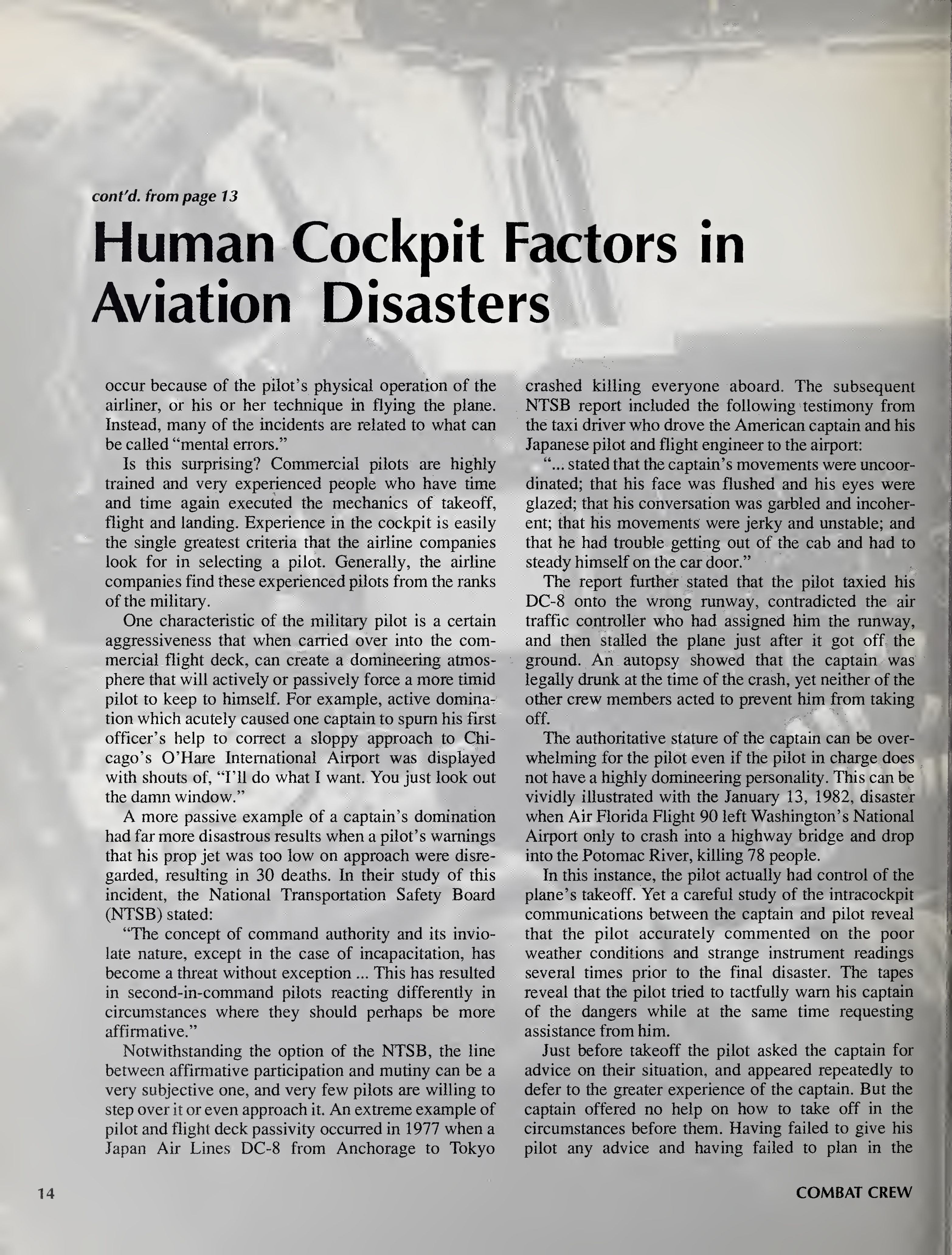
However, in its investigative capacity, the FAA has only very recently begun to understand that not all crashes or failures are primarily caused by mechanical breakdowns or weather conditions. While these and other causes are directly responsible for most if not all accidents, often it is the human factor that becomes the primary cause of the near or total disaster.

As long as manned flight requires operation by a human or by a human crew, investigations of crashes will have to include more subjective analysis. It won't be enough to determine that this low front or that broken fuel line caused the crash. To complete thorough investigations, the FAA may have to resort to questions involving the human condition that are behavioral or psychological. Indeed, some recent jetliner crashes have attributed their primary cause to the human factors of poor flight management, faulty decision-making, and strained relationships among the crew in the cockpit of the aircraft.

If the seriousness of air crashes can be categorized by number of lives lost and amount of damage suffered, then the true disasters involve commercial passenger airliners. Despite the efforts of the commercial aviation industry to guarantee safe flights 100% of the time, many disasters are caused by human error.

If the pilot's actions are the primary cause of an aviation incident or disaster, it does not seem to often

Human Cockpit Factors in Aviation Disasters



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Human Cockpit Factors in Aviation Disasters

occur because of the pilot's physical operation of the airliner, or his or her technique in flying the plane. Instead, many of the incidents are related to what can be called "mental errors."

Is this surprising? Commercial pilots are highly trained and very experienced people who have time and time again executed the mechanics of takeoff, flight and landing. Experience in the cockpit is easily the single greatest criteria that the airline companies look for in selecting a pilot. Generally, the airline companies find these experienced pilots from the ranks of the military.

One characteristic of the military pilot is a certain aggressiveness that when carried over into the commercial flight deck, can create a domineering atmosphere that will actively or passively force a more timid pilot to keep to himself. For example, active domination which acutely caused one captain to spurn his first officer's help to correct a sloppy approach to Chicago's O'Hare International Airport was displayed with shouts of, "I'll do what I want. You just look out the damn window."

A more passive example of a captain's domination had far more disastrous results when a pilot's warnings that his prop jet was too low on approach were disregarded, resulting in 30 deaths. In their study of this incident, the National Transportation Safety Board (NTSB) stated:

"The concept of command authority and its inviolate nature, except in the case of incapacitation, has become a threat without exception ... This has resulted in second-in-command pilots reacting differently in circumstances where they should perhaps be more affirmative."

Notwithstanding the option of the NTSB, the line between affirmative participation and mutiny can be a very subjective one, and very few pilots are willing to step over it or even approach it. An extreme example of pilot and flight deck passivity occurred in 1977 when a Japan Air Lines DC-8 from Anchorage to Tokyo crashed killing everyone aboard. The subsequent NTSB report included the following testimony from the taxi driver who drove the American captain and his Japanese pilot and flight engineer to the airport:

"... stated that the captain's movements were uncoordinated; that his face was flushed and his eyes were glazed; that his conversation was garbled and incoherent; that his movements were jerky and unstable; and that he had trouble getting out of the cab and had to steady himself on the car door."

The report further stated that the pilot taxied his DC-8 onto the wrong runway, contradicted the air traffic controller who had assigned him the runway, and then stalled the plane just after it got off the ground. An autopsy showed that the captain was legally drunk at the time of the crash, yet neither of the other crew members acted to prevent him from taking off.

The authoritative stature of the captain can be overwhelming for the pilot even if the pilot in charge does not have a highly domineering personality. This can be vividly illustrated with the January 13, 1982, disaster when Air Florida Flight 90 left Washington's National Airport only to crash into a highway bridge and drop into the Potomac River, killing 78 people.

In this instance, the pilot actually had control of the plane's takeoff. Yet a careful study of the intracockpit communications between the captain and pilot reveal that the pilot accurately commented on the poor weather conditions and strange instrument readings several times prior to the final disaster. The tapes reveal that the pilot tried to tactfully warn his captain of the dangers while at the same time requesting assistance from him.

Just before takeoff the pilot asked the captain for advice on their situation, and appeared repeatedly to defer to the greater experience of the captain. But the captain offered no help on how to take off in the circumstances before them. Having failed to give his pilot any advice and having failed to plan in the

slightest for difficulty in takeoff, the captain seemed to feel his only responsibility was to read the instruments and warn the pilot of any problem. However, it is the pilot who continually referred to the instruments.

This nonparticipation by the captain was repeated many times prior to takeoff, yet the captain was also continually, although subtly, urging that the flight take off as planned. He ignored safety precautions, underestimated the weather conditions, and generally failed to recognize the overall dangerous nature of his aircraft's situation until it was too late.

Interestingly, the captain's comments to his pilot's requests for advice were minimal until the pair were committed to the fatal flight. Then the captain started talking in an apparent attempt to urge the airliner to climb and to justify himself before his now silent pilot. As the jetliner started to stall and go down, the pilot both vindicated all of his earlier doubts about the flight and also brought his captain back into the fatal reality of the moment by only saying, "Larry, we're going down, Larry." With only a second to answer, the pilot replied, "I know it."

Dr. Aaron Waters of the University of California, Santa Cruz, who has had much experience with mountain rescue groups, made some very valuable comments about the captain and pilot of Air Florida Flight 90 that are very illustrative of the nature of the dangerous condition caused by captain domination and pilot passivity:

"...You correctly blame the pilot for the crash, but maybe you do not bring out clearly enough that it was the pilot's complete insensitivity to the copilot's doubts, and to his veiled and timid pleas for help, that was at the root of all this trouble ... I've found that the people who lead others into trouble are the hale and hearty jocks trying to show off. They cannot perceive that a companion is so terrified that he is about to "freeze" to the side of a cliff – and for very good reason. And once this has happened the one that led him into it becomes an even worse basket case, and the most difficult one to rescue. I think the copilot "froze" and immediately the pilot "froze" even worse and began talking to the airplane. However, the copilot is also at fault; left to himself he would have called the tower and not flown the mission, but in the presence of his companion he was guilty of self-deception."

University of Texas psychologist Robert L. Helmreich says that a large proportion of accidents arise from failure to work as a team. An Eastern Air Lines L-1011 crash in 1972 which killed 101 people is a classic case of poor flight management.

Both the captain and first officer became distracted by a malfunctioning light on the instrument panel. While the pilot replaced the light, the captain divided his attention between helping his pilot and trying to find other ways of solving the problem. But neither had noticed that the airliner had dropped 2000 feet in four minutes, with the result that they literally flew the plane into the ground while trying to replace a tiny light bulb.

Helmreich has found two personality traits that they find relevant to flight crew performance: instrumentality or goal orientation and expressivity or group orientation. "Macho" pilots generally have goal orientations that are high-instrumental and low-expressive, and they tend to take more risks. But Helmreich points out a plus for this type:

"The authoritarian type may be generally disliked as a captain in normal operations. Such an individual may, on the other hand, take charge very effectively during emergencies, while the democratic leader might be highly valued during routine operations, but find it more difficult to assume a strong leadership role when the situation demands it."

Helmreich said that the best captain is the one with both high goal and group orientation because a lack of teamwork causes accidents but the individual performance in emergencies might be expected to be handled better by the goal-oriented person. "Such individuals might be expected to be both competent in dealing with the technical aspects of the problem and attuned to the reactions of others," he said.

The National Aeronautics and Space Administration's Aviation Safety Reporting System shows that 70 percent of all civil aviation incidents during a recent five-year period were attributable to human error, mainly when information was improperly transferred from one crew member to another or was not transferred at all. Human error has to do with how crew members communicate, how their personalities interrelate, how clearly they set lines of authority and adhere to them, and how responsibilities are delegated.

The airline industry has found that solving the human problem is more difficult than handling technical problems. If pilot error cannot be entirely eliminated, then it can and must be at least reduced considerably. **Fly smart, Fly safe!**

High Speed/Heavyweight Aborts

Capt Spencer Johnson
43 ARES, Fairchild

My first tanker task force TDY as a new AC was finally drawing to a close. We had been extended two weeks from our original return date and we were all more than anxious to get back home to reassemble plans that had been shattered by an extension.

The day finally arrived for our final legs home. We were to depart Lajes AB, Azores as last of a three ship cell to meet some F-4's for the Coronet back home. Our aircraft was fully ready and loaded to 240,000 pounds of fuel with water. Preflight preparations went without a hitch. Our spirits were high and the crew chief sitting in the jump seat was all smiles as we taxied out for takeoff.

Takeoff clearance came crisply over the radio and the lead ship rolled out and took off on time. Two went right behind lead, and then it was our turn. I pushed up the throttles and the crew chief's grin grew wider as the four mighty J-57 engines took water. Acceleration was pretty good considering that we weighed over 250,000 pounds, and in seconds we were calling 90 knots. In just a few more hundred feet we would be committed to take off and we were feeling mighty fine. At 125 knots, just eight below our 133 S1 speed, I heard the sound of engines winding down. Glancing at the engine instruments, I was dismayed to see number 2 and number 3 fuel flows drop to about 9000 pph and their respective EPRs drop as well. The pilot later told me he had observed the inboard water injection low pressure light come on.

"Throttles-Idle, Brakes-Apply, Speed Brakes-60." The abort boldface was verbalized and accomplished as we said our silent goodyes to our cellmates and the Coronet. A critical field length of just over 1000 feet shy of runway available and a heavyweight high speed abort convinced me that a good braking effort would be necessary. My crew, being the well-oiled machine that it is, immediately sprang into action. The pilot called out airspeeds and runway remaining every 1000 feet. When we had slowed and were under control, we ran the abort checklist, and called tower for fire coverage.

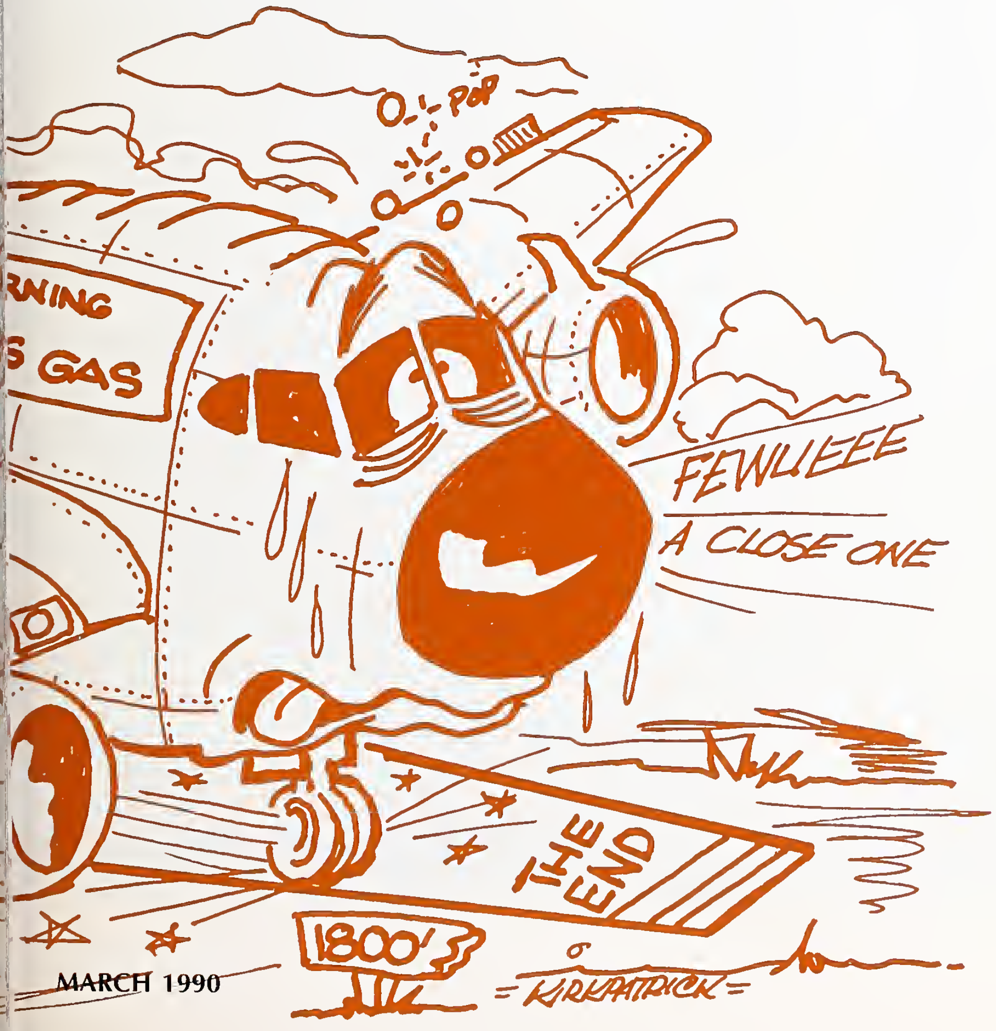
We had slowed to less than 30 KIAS with about 1800 feet of runway remaining. We cleared the runway at the end and taxied onto the apron. We stopped and I held the brakes while the nav went down the ladder to chock the nose gear. The two crew chiefs and boom got out while I shut down the engines and, after confirming that the chocks were in, released the brakes. The pilot got out and I double checked all the throttles

and the battery switch. After making sure that everyone was out, I clambered down the ladder.

Three minutes after we abandoned the jet, the fire trucks arrived and set up their hoses. About 15 minutes later, smoke began to rise from the main gear trucks. Twenty-nine minutes after we left the aircraft, the number 2 tire on the left main truck blew its thermal fuses and deflated. The fluid seals on the brake calipers ruptured, and leaking hydraulic fluid on the hot number 2 brake quickly caught fire. The fire department made short work of the fire as they moved in with their hoses. My crew chief's grin quickly inverted to a frown as the reality of the damage set in. The inboard water injection pump had in fact failed, causing the abort with resulting hot brakes. In all, seven brakes and two tires had to be replaced. Had we expended just 2.5 million more foot-pounds of brake energy (we used up 17.5 million), we would have been in the red zone and would have had to have all of the tires changed. Since it was Friday, parts would not be flown in until Monday night, and our spirits sank as we faced yet another delay. We waited through the long weekend, parts arrived as promised, and we finally dead-headed home on Tuesday morning.

Experience being the great teacher that it is, here are some lessons I learned.

1.) If Only ... ! This phrase dominated our conversation in the first few hours after the abort. "If only the water had failed **after** S1, we'd be on our way home." "If only the water had failed **earlier** in the takeoff, we wouldn't have had hot brakes and wouldn't have had to wait the weekend for parts." "If only we hadn't been extended for the Coronet"... the list went on and on. Fact is, **if only's** are pretty much worthless except for rueful reminiscing. We had a major system failure prior to S1 and according to procedures had to abort so we did. Going by the book will keep you out of trouble 99.9% of the time.



2.) Brief, Brief, Brief! Despite our aircraft's flawless water injection and power plant performance up to this point in the TDY, we still briefed all EP's before each flight. Specifically, the abort scenario was briefed in detail to include who made the decision, who physically pulled the throttles, speed brakes, slowing under control before checklist or tower call, order of evacuation to include PAX, and alternate escape methods. During our actual abort, everyone did exactly as we had briefed to do time and time again. Have a plan, brief it, and pay attention to the brief!

3.) Our abort, fast and heavyweight at it was, was not further complicated by things such as low RCRs, low visibility, passengers on board (other than crew chiefs), hazards **inside** the aircraft (i.e., smoke, fire), or high crosswinds. All of these potential complications need to be considered in forming an abort plan of action before going out to fly!

4.) To paraphrase the Dash-1: Be mentally prepared for system failures on takeoff. About 1 1/2 seconds elapsed between my hearing the engines wind down to my actually bringing the throttles back. About 1/2 second of that was spent staring in disbelief at the fuel flow and EPR gauges. How dare did our airplane poop out on us this close to winging our way home! Separating emotional consideration such as "get home-itis" from the go/no go decision process is a must.

5.) Finally, a high speed, heavyweight abort close to S1 is a unique kind of experience. Most inflight emergencies (except those in critical phases of flight) allow ample time for the crew to go to a holding fix, get out the books, and work out a solution to a problem with appropriate inputs from command post. This isn't true with the abort. The no-go decision must be made quickly and with little or no discussion. This means that proper preflight briefing and preparation and solid adherence to Dash-1 procedures becomes all the more important. One way or the other, the EP will be over with in a very short time. **Fly Smart, Fly Safe!**

The twisted metal remains of a motorcycle embedded in the left front fender of a car were viewed by all who passed. It stands as a reminder to all that accidents do happen. The driver of the car was physically unhurt, but the image of the cyclist bouncing off the windshield will be with him a long time. The motorcyclist suffered numerous injuries. What happened? Who was at fault?

The motorcyclist, being the first vehicle at a traffic light on a multilane highway, accelerated quickly to the speed limit in the direction of the car. The cyclist wore the required protective equipment plus boots and long pants. His headlight was on; but then, so were the lights of the vehicle behind him. Meanwhile, a block from the traffic light, the driver of the car sat impatiently watching for a break in the traffic in order to make a left turn onto the highway. His protective gear, a seatbelt, was worn and because of the early morning hours, his lights were also turned on.

Seeing what appeared to be a break in the traffic, the car driver pulled out onto the highway. The cyclist tried to brake, but could not sufficiently slow the bike before hitting the car. The front wheel of the motorcycle implanted itself in the left front fender of the car just behind the wheel. The collision ejected the rider from the bike and onto the windshield with his right shoulder, shattering the glass, and then rolled across the top of the car landing on the street on the far side of the accident site. The driver never saw the motorcyclist.

This is an all too familiar scenario. Have you spotted some of the errors already made by the two victims of the mishap? First, let's look at the obvious. The driver of the car pulled out in front of the motorcyclist. Up to that point, this driver had done nothing wrong except for his impatience. He came up to the intersection and came to a complete stop. He looked in both directions at least twice, and "seeing" that he could "safely" pull onto the highway, he did. He did not see the motorcycle's headlight was on. Amid the backdrop of the other car's lights and the lights of the surrounding business area, the single light of the motorcycle did not stand out. The driver of the car never saw the motorcyclist.

Now the less obvious. The motorcyclist accelerated from the traffic light at a higher rate than the other cars, thereby placing himself considerably ahead of the other vehicles that left the light at the same time. And as was found out later, the motorcyclist was not watching and anticipating the movements of other cars. The cyclist thought the other driver saw him. Mishaps like this one occur every day because the drivers of cars do not normally **see** motorcycles.

How can this be prevented? For one thing, the driver of the car needs to take a closer look at what is happening around him. Take time to see **all** of the vehicles; not to just glance and look for the big, heavy stuff. Deliberately look for smaller, less obvious things. If a lighted motorcycle is hard to see, think about a person walking or a child on a bike. They won't be seen either.

The driver of a car needs to drive defensively. Always look and know what is around you. Recognize the hazards around you that can obscure or hide other vehicles or individuals. Take your time in making decisions. A few extra seconds waiting may prove far shorter that the hours waiting for the police, ambulance, wreckers, and insurance adjusters to be finished.

The motorcyclist, more than any other vehicle operator, needs to drive defensively. The cyclist has to watch and be aware of everything around him; know where all the other vehicles are and anticipate their movements; and expect and prepare not to be seen. Cyclists may have to slow down, change lanes, activate the horn, or attract attention in some other way. The cyclist must be prepared for the worst. He can not be complacent; he must expect the car to pull out in front; and he must constantly know what his options are before the mishap begins.

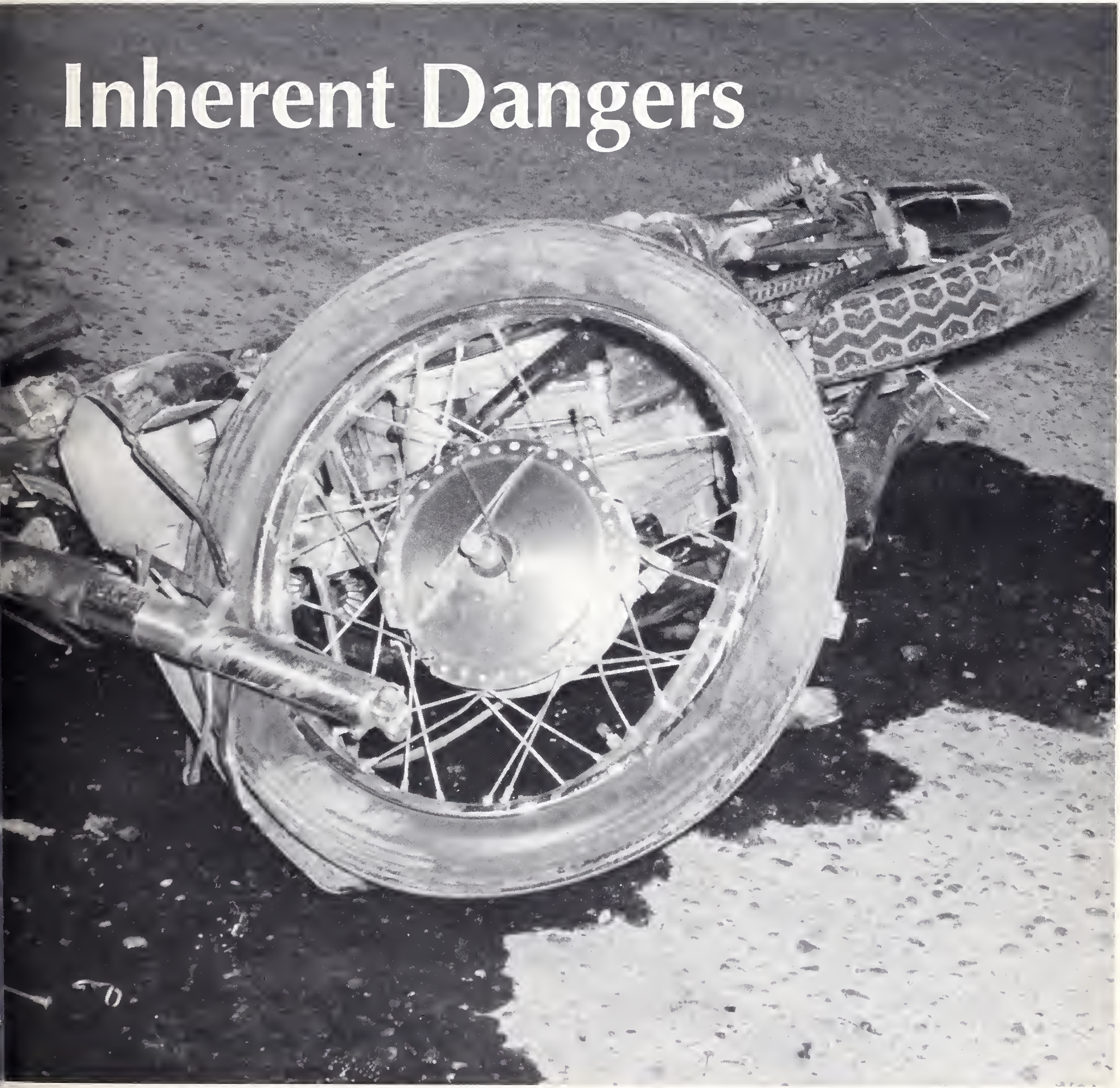
The motorcyclist also must remember that he or she is not generally seen by other drivers. Therefore, the cyclist must make himself as visible as possible. Staying with a group of cars may

TSgt W. R. Wanamaker
Dyess AFB

not make the cyclist, as an individual, more visible, but the group of vehicles, as a whole will be seen. The cyclist needs to also understand that it is difficult enough to determine the speed of vehicles, be it night or day, and it is almost impossible to gauge the cyclist's speed. This difficulty, coupled with the higher acceleration rates now built into the bikes, equals out to drivers on the road who **will not** see a mishap developing.

All of us enjoy driving or riding the vehicles of our choice. But along with the enjoyment comes the responsibility of driving and riding properly to avoid causing a mishap. This can be done by **watching, anticipating, preparing, and reacting.** But reacting properly only occurs when the first three conditions are fully met.

Inherent Dangers



Deja Vu

TSgt W. R. Wanamaker
Dyess AFB

Have you ever driven to work and once there, wondered how you got there? Wow! Talk about deja vu. While sitting in your car, or on your yacht, you start retracing your route wondering if you stopped at all the stop signs and traffic lights but you really can't remember. Well, don't feel alone; it's happened to all of us at one time or another.

Many times we get up in the morning and get into a rush to go to work. We wake up late, tired from getting to bed late and not getting enough sleep. We crawl into or onto our vehicles and turn the key, feeling the power as the machine comes to life. We put the thing in gear, pull out of the driveway and head to work. Next thing we know, we're there, wondering how it happened. You can't remember stopping at the stop signs, seeing the security police person wave you through, making the turns that head you in the right direction, or even pulling into the parking space. You get just a little bit nervous, but go to the job anyway and vow that it won't happen again.

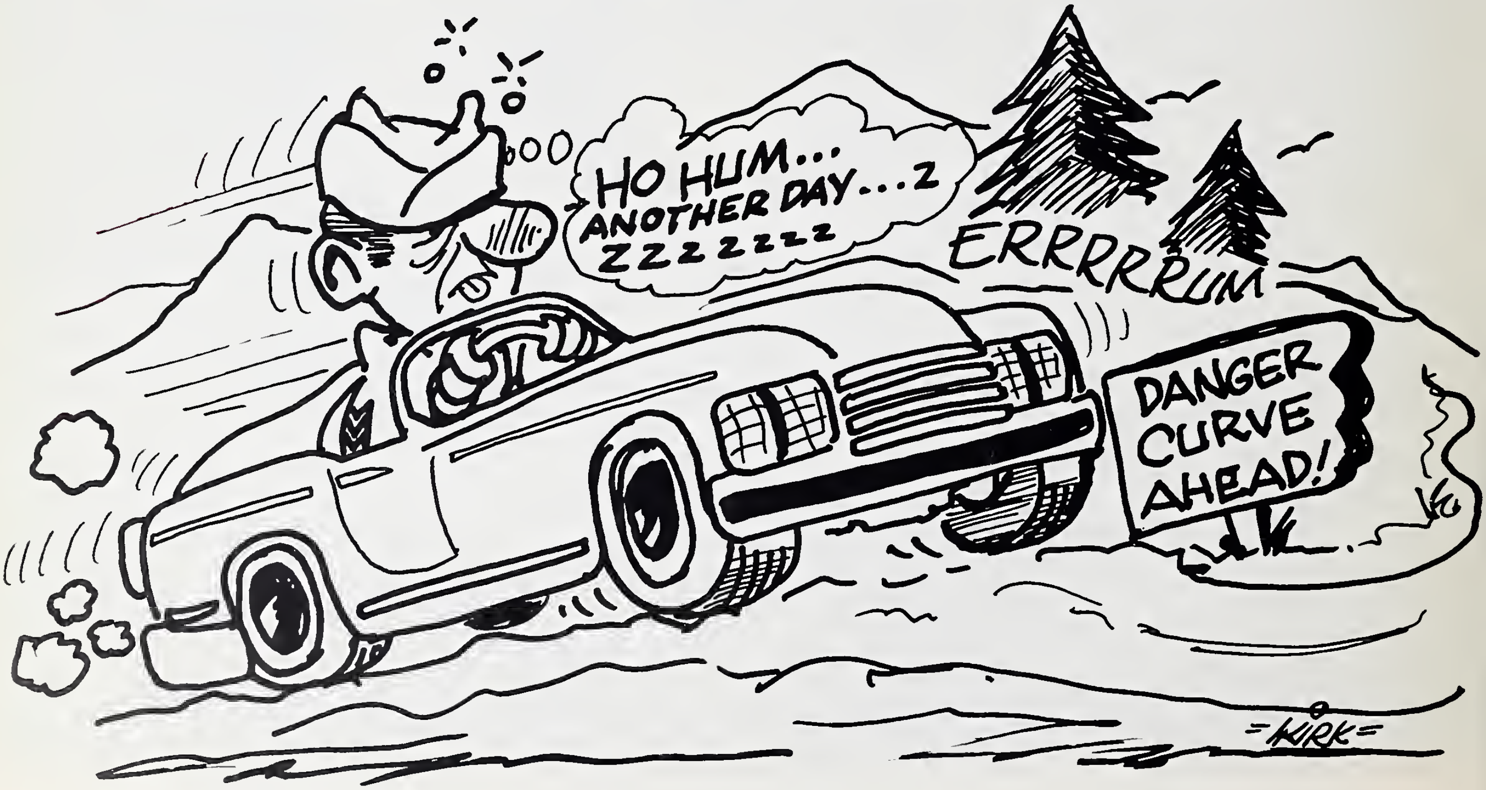
What is usually happening is that we are daydreaming or we are mentally still asleep. Often we're in a rut. We drive the same route every day and it becomes habit forming. The real problem starts when the other people on the road don't fit into the same habit pattern.

Driving a vehicle is a great responsibility and can be a deadly one. We must be attentive and fully aware of what is happening around us at all times. The time to be asleep or daydreaming is not when a child going to school darts out in front of your vehicle. The same principle applies with other vehicles on the road. You don't need the hassle of a fender bender, or even worse. Try explaining to police how you just didn't see the mishap victim.

When driving a vehicle, be aware of everything that is happening around you. Look out for kids and cars. Look for the motorcycles — there's bound to be one out there somewhere. If driving the same route every day has become a habit, mix it up and add a little variety. It will spice up the day and will be much better than having a mishap. If you still have a problem being attentive, try riding with someone else, get a passenger, or listen to a weird radio station.

Motorcyclists, you have to be alert at all times; even more so than the automobile operator. You can't afford to take the chance of daydreaming or being inattentive to your surroundings for even a second. It could lead to the death of someone you love — yourself.

The cure: Get enough sleep. But vary your routine. Get up earlier, try a new road to work, car pool, anything! **Be inventive — get out of the rut.**



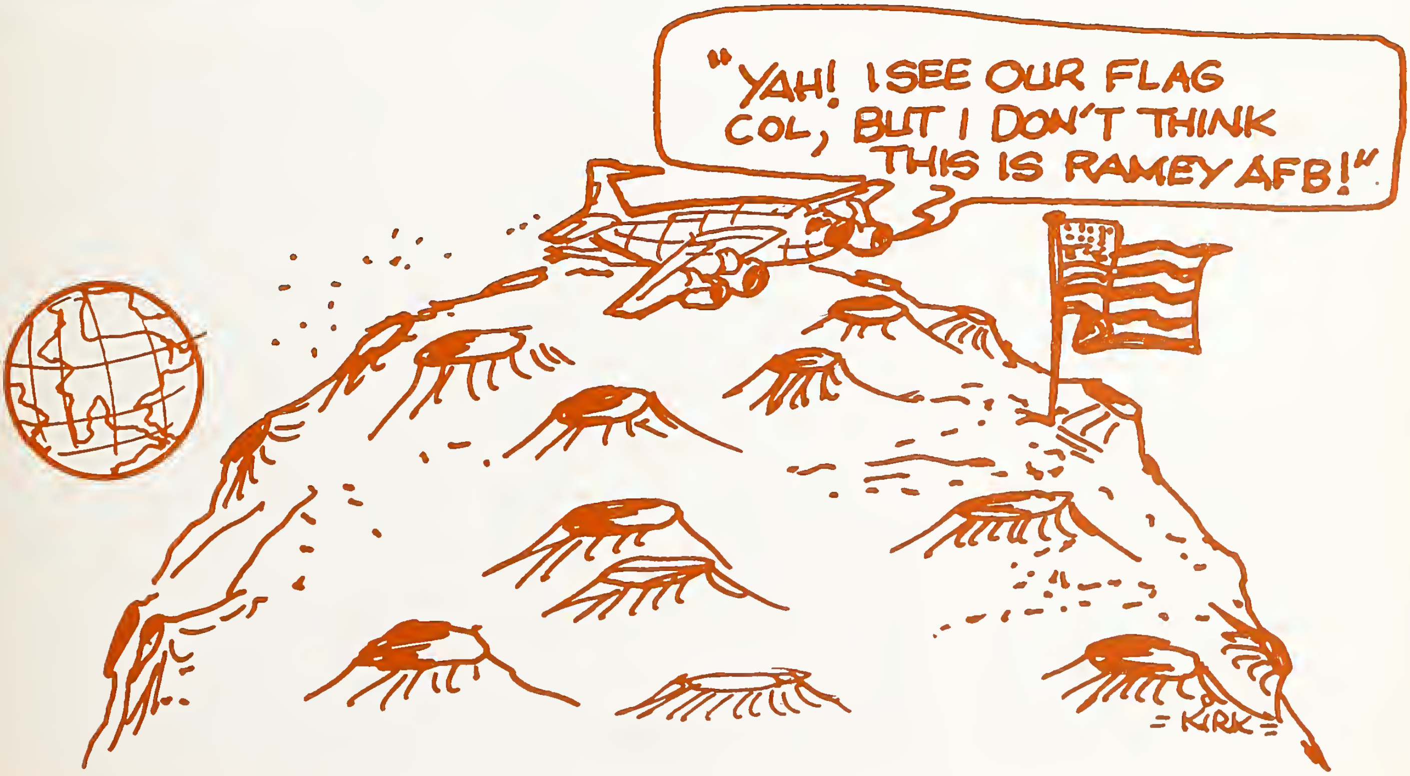
Old Experienced Folks Never Make Mistakes!

Lt Col Keller
911 AREFS/CC

There I was on the return leg of a great trip to South Africa as a right seater in a "Droop Snootskie," aka an EC-135N. It had been a great trip scheduled for 10 days – Patrick AFB (our home base) to Ascencion Island to Capetown, South Africa, and return. The trip had blossomed into 18 days with enough time to play golf, sight-see, and generally get paid for having a good time. We tried to get home, honest, but the missile tests we were supporting wouldn't cooperate.

Anyway, back to my story. The leftseater was a Lt Colonel, with 6000 hours of flying time who was also our current chief of Stan Eval; our navigator was a Lt Colonel with 5000 hours and also in Stan Eval; and our flight mechanic had over 3000 hours. We pressed off from Capetown, landed at Ascencion five hours later, turned the aircraft, and launched again; destination, Ramey Air Base, Puerto Rico, about nine hours away. As the token Lieutenant and right seater with 600 hours total time, I was trying to keep my perspective as the rest of the crew added up my infractions of unit rules requiring the automatic buying of liquid refreshments upon landing.

Well, after about eight hours, my AC called for the checklist and we began our descent into Ramey. We were having navaid problems, but no sweat; we always had the ADFs pointing at the field. The AC briefed the approach while I sort of listened and looked at all the beautiful blue-green water and islands of the Caribbean; meanwhile we continued to descend. Something just didn't seem right, but what did I know? Boy, it was a beautiful day, scattered puffy clouds, almost VMC, islands in sight, etc. The AC decided to cancel vectors and we checked in with tower that we were 15 miles south, runway in sight, and would give him a call on base. We leveled off, configured the airplane, and I called for base with gear. Still couldn't get a good lock-on with our navaids but what the heck; the AC with all his experience knew what he was doing. After a pause, tower responded that they didn't see us but to continue. As we turned final, I called for winds and tower said "we still don't see you but we do have an aircraft on the horizon at about 13 miles." Almost simultaneously the nav said, "This isn't the right island." Well to make my story short, we had lined up on an island about one-tenth the size of Puerto Rico with a bay in about the same place with a runway about 3000 feet long. Navaids problems, coupled with scattered puffy clouds masking the size and shape of the island, led us down the proverbial path. The alert tower operator saved us that day and I learned a valuable lesson that I still apply 16 years later – It doesn't matter how many hours you have; old heads can make mistakes too – **stay alert and stay alive!**


"YAH! I SEE OUR FLAG COL, BUT I DON'T THINK THIS IS RAMEY AFB!"
KIRK

1990
SAC'S YEAR OF
REVIEWING
FUNDAMENTALS

VALOR

On The...

THE CUTTING EDGE

Capt Russ Blaine
Vandenberg AFB

Allow me to make a deal with you this month, reader. I ask that you allow me to deviate from the standard "Cutting Edge" format for a few paragraphs. In return, I'll tell you a short personal story. All I ask is that you take a few moments to consider some of the observations I've made about the way things work. In this, the Year of Reviewing Fundamentals, take a few minutes for a personal evaluation.

At 16 I got my first job at the XXX Chemical Company. My official company record proclaimed me to be Russ Blain, OPERATOR. My job was to produce colored plastic pellets for sale to local industries. The first day on the job was spent in an orientation, conducted by a man with a disheveled, tired look (which I, of course, took for worldliness) consisted of a superficial demonstration of how the equipment worked. As far as I was concerned, I knew enough to be the best operator in the plant. I set about my work with an energy never known to me before.

In two months the novelty began to fade. Eight hours began to seem like a week. That's right about the time my first accident occurred. I was working with a wire rotary brush cleaning some metal parts when something nearby distracted me. In an instant, the wire brush caught my carelessly unbuttoned shirtsleeves, and a whirling monster of steel bristles was soon pressed against my wrist. The quick actions of a friend prevented the brush from cleaning my whole arm, but I was still left with a peek at my wrist bone. Fortunately, the pain wasn't too bad, and I was left mildly amused.

"Don't know what happened, boss," I said as they carted me off to the hospital. "You'd better look at that thing."

Over six months went by, and I was now one of the senior operators in the division. One day, I found myself giving one of the orientations I was so impressed with such a long time ago. As I began to demonstrate the way the wire brush worked, I picked up the plastic safety mask we were required to use and perched it on my forehead, not quite pulling the mask down over my eyes. As I began explaining the hazards, using my own accident as an example, something never seen before occurred. Upon applying power to the brush, the rotary head exploded into thousands of tiny projectiles, many of them coming to rest in my face.

This time the trip to the hospital wasn't so humorous. I couldn't see out of my golf ball sized right eye, and the metal porcupine look didn't do justice to the right side of my face. Once again, someone was looking over me. A little bit of work in the doctor's office, a little bit of time off, and I was okay. Stick with me, there's more.

A year passed, and I considered myself fairly fortunate to be safe and intact. A coworker wasn't so lucky. He received third degree burns over thirty percent of his body in a fire-chemical accident. His lawyer claimed the cigarette he was smoking at the time was irrelevant. My work now involved long, monotonous shifts on a piece of equipment called a dicer. Let it suffice that the main area of my attention was now whirling blades rather than brushes. At shift change-over, my replacement walked in, applied power to his machine, and proceeded immediately to the dicer, rather than coming to me for a quick briefing.

"Hey!" I yelled. "Wanna know what's going on?"

"No sweat," came the reply. "Nothing ever changes."

As he climbed on the machine, he kicked the ON switch with his knee. The knife housing, removed for cleaning by the previous shift, quickly changed from a convenient handhold to a resting place for two fingers, cleanly severed above the knuckle.

I walked into work the next day and quit. As I left the building, I looked around at things I had never really seen before: safety posters, guard rails, protective leather gloves, FIRE EXTINGUISHER signs, EMERGENCY EXIT signs, etc. All had been in place since I was employed there, but I had never taken the time to notice – and I had never been given the time to learn. The skeleton of a safe operation was almost in place; only the backbone, enforce procedures, training and people who cared were missing.

Flash ahead eight years to the second day of alert at a snowed-in launch control facility (LCF). It was going to be a long, quiet day with only tomorrow to look forward to. That's when I heard just what I didn't want to hear.

> "As he climbed on the machine, he kicked the ON switch with his knee. The knife housing, removed for cleaning by the previous shift, quickly changed from a convenient handhold to a resting place for two fingers, cleanly severed above the knuckle."

"Russ, we've got a major problem back here!"

As I wheeled around to look at my new deputy, my heart froze. The rear of the launch control center was filled with thick, acrid smoke. A quick search failed to reveal the source. At that moment, the LCC began to vibrate, as though being moved by an earthquake. My deputy quickly reached to open the motor generator access cover, the only area we hadn't yet examined. It wasn't long before we realized the source of our fire. Long-memorized checklists vaporized in the excitement, but our T.O.s, nearby out of habit, proved to be our savior. We went into action with a minimum of discussion, my deputy opening the blast door while I handled the fire. It wasn't long before we realized LCC shutdown would be required. Confidently, we applied every well-practiced step on the checklist. As we exited the capsule and shut the door, visibility was near zero and flames were spreading three feet high from the generator access cover.

I learned from a maintenance friend the following week that the fire I had experienced looked to be the worst seen in recent years. Copper cables two inches thick had melted and become welded to the body of the motor generator. In an interesting change of pace, maintenance troops were crediting the operations guys with preventing the total loss of the LCC. Everyone from the wing commander down supported our actions.

Thankfully, the Air Force provided me with the tools I needed to make the right decision: standardized procedures, a tough but fair training program, and most importantly, people who cared. As an instructor at the 4315th, I sometimes find it difficult getting new missileers to appreciate the importance of the "basics" we teach. I keep emphasizing that the standardized procedures reflect the cumulative knowledge of decades worth of missileers. Procedures are written down because we are professionals with a critical mission. You can't perform the mission if you aren't alive.

I believe in the way we do business because I have seen the results of doing otherwise. Think about how **you** do business on a day-to-day basis. The tools are in place. Use them. *Don't be a victim of the cutting edge — be on the cutting edge!*

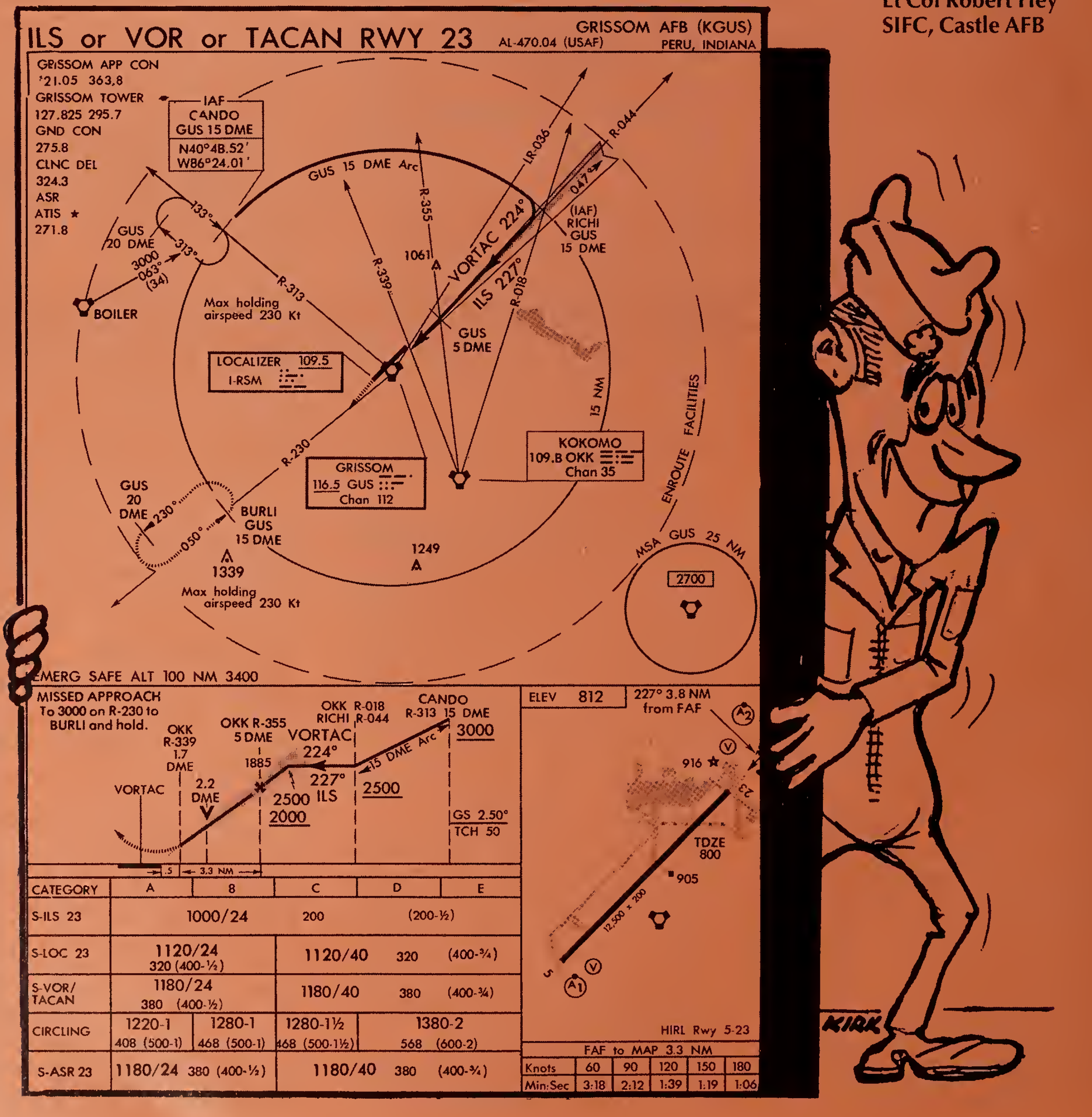
Answering Your Instrument Questions

Each day at *SIFC* we answer a variety of questions that you ask us from the field. There are a lot of misconceptions and related myths floating around out there. We thought it would be good this month to pass along some of our collective wisdom, sought out after many hours of staffing and research. We appreciate the questions you've asked and the confidence you have in us to give you the straight scoop. Here's some examples of your questions and the answers provided.

Question: AFM 51-37 prohibits us from flying RNAV approaches or using RNAV criteria past the IAF. However, can we use RNAV procedures to fly SIDs and STARs?

Answer: For a long time we've taught our course members that RNAV procedures can be used to fly a SID because the SID is considered to be part of the enroute structure. Recently, we were advised by the USAF Instrument Flight Center (IFC) this is no longer the case. After reevaluating the issue, the IFC has decided that both departures and approaches are con-

Lt Col Robert Hey
SIFC, Castle AFB



CATEGORY	A	B	C	D	E
S-ILS 23	1000/24		200	(200-½)	
S-LOC 23	1120/24 320 (400-½)		1120/40	320	(400-¾)
S-VOR/TACAN	1180/24 380 (400-½)		1180/40	380	(400-¾)
CIRCLING	1220-1 408 (500-1)	1280-1 468 (500-1)	1280-1½ 468 (500-1½)	1380-2 568 (600-2)	
S-ASR 23	1180/24 380 (400-½)		1180/40	380	(400-¾)

FAF to MAP 3.3 NM

Knots	60	90	120	150	180
Min:Sec	3:18	2:12	1:39	1:19	1:06

sidered part of the "terminal" phase, so the restriction in AFM 51-37, para 6-12 applies to both departures and approaches. They informed us that no USAF equipment is certified for terminal operations. STARs are treated differently. You may use RNAV procedures to fly a STAR to the IAF as long as the geographic coordinates are published on the STAR.

Question: On the ILS RWY 23 approach to Grissom AFB, IN, (Fig 1) the glideslope intercept altitude is 2500′. The LOC FAF altitude is at 2000′. Would I be wrong to descend to 2000′ and intercept the glideslope at that altitude?

Answer: This one is not cut and dry. AFM 51-37, para 13-1b(2)(b) says: "Maintain glideslope intercept altitude (published or assigned) until reaching the glideslope intercept point. (Do not descend below glideslope interception altitude if the CDI indicates full scale deflection)." The Airman's Information Manual defines glideslope intercept altitude as "the minimum altitude to intercept the glideslope/path on a precision approach." However, the glideslope intercept altitude can be defined three different ways, a minimum, recommended, or mandatory altitude. If the glideslope intercept altitude is printed as a recommended altitude as it is on our example, you would be legal descending to the FAF altitude. Recognize though, that your final approach segment will be shorter than you might otherwise expect. Good judgment suggests you maintain the recommended altitude. That's why it *is* the recommended altitude.

Question: Am I required to notify ATC when departing the IAF altitude or when departing an assigned altitude while being radar vectored onto an ILS final approach course?

Answer: This issue has prompted many questions. The additional reports section of the FIH requires pilots to notify ATC "when vacating any previously assigned altitude or flight level for a newly assigned altitude or flight level." The USAF IFC, in consultation with the FAA, says this paragraph in the FIH does not apply to vacating an altitude after receiving clearance for an approach. Acknowledgement of the approach clearance tells ATC that you are/will be descending IAW the approach procedure. If ATC wants an altitude call-out at the beginning of the approach they will request it. *Bottom Line.* You don't need to call out on the IAF altitude unless specifically requested by ATC. In addition, when being radar vectored, you don't need to call out of the last radar vectored altitude when descending to altitudes depicted on the approach plate.

Question: While climbing out of the low level route, center cleared us to climb and maintain the enroute flight level requested on initial call-up on the climb-out. Do we have to comply with intermediate altitudes?

Answer: No. Your clearance to climb and maintain the en route flight level supersedes the previous clearance. The AIM, para 270(g) says that "the last ATC clearance has precedence over the previous ATC clearance." The controller expects you to comply with the last clearance upon receipt. Intermediate altitude restrictions on the low level route do not apply.

Question: I'm confused about filing lost com altitudes for low level routes. FLIP specifies lost communications altitudes for all SAC routes, but sometimes they aren't always practical. What am I supposed to do?

Answer: The lost communications altitude in FLIP is just a safe altitude that HQ SAC and the FAA have coordinated and is for the controller's planning. The FAA's handbook (7610.4) doesn't address filing a lost com altitude in the remarks sections as SACR 55-3 does. Both FLIP and the controller's handbook say that in case of lost com we should fly the altitude filed in the flight plan once exiting the route. SACR 55-3 says we will file a lost com altitude (para 3-5g (2)) and leads many pilots to think they must file the lost com altitude listed in FLIP (for SAC developed routes). In reality, file the altitude you want to fly. In general that altitude should be the same one you precoordinate with ARTCC prior to entry (IAW SACR 55-3, para 3-5g (1)). Then the controller knows what to really expect.

Question: In your opinion, when flying a nonprecision approach, is it best to get down early to the MDA to provide more time to scout out the runway, or should I arrive at the MDA at or just prior to the VDP?

Answer: This is one of those "it depends" answers. Some pilots like to use a healthy 1000′-1500′ per minute descent rate to get down well prior to the VDP. AFM 51-37, para 13-1a(2)(e) says: "Arrive at MDA with enough time and distance to identify runway environment and depart MDA from a normal visual descent point to touchdown at a rate normally used for a visual approach in your aircraft." We recommend a technique that takes into account two possible weather conditions. When flying to a field with a low ceiling, but good visibility, get down to the MDA early (well prior to the VDP) to find the runway and perform whatever alignment maneuver may be necessary with the runway. When the visibility is poor but the ceiling is not a factor, compute a descent rate to arrive at the MDA just prior to the VDP. This maximizes the downward vision angle and aids in finding the runway. An even better idea in a low visibility situation is to fly a precision approach, if available.

We recognize these questions and answers may generate more questions. If we have aroused your ire or interest, give us a call at AV 347-4571, or write us at 330 CFIS/DOI, Castle AFB, CA 95342-5000. Until next month, keep those cards and letters coming. **Fly Smart, Fly Safe!**

SAC FLYING MILESTONES

To gain listing in the Flying Milestones, crew members will be selected by their unit commander, have flying hours in SAC aircraft verified by unit flight records, and have no involvement as a causal factor in a Class A, B, or C flight mishap. Names are sent to NAF/DOT and forwarded quarterly to HQ SAC/DOT.

19 AREFW

1000 Hours

Maj Ernest E. Infinger, Jr.
Maj Steven L. Norris
Capt Brian K. McIntosh
Capt Richard A. McClain
Capt Dennis J. Smith
Capt Alan A. Pham
Capt Philip W. Jones
Capt Rodney L. Travers
Capt John M. Young
Capt Daniel J. Monahan
Capt Lawrence E. Nanna
Capt Tony A. Martin
TSgt Michael D. Cocke
SSgt Timothy M. Fowler

2000 Hours

TSgt Ricardo H. Reed
SSgt Jesus M. Lopez

4000 Hours

SSgt Avery H. Harrington, III

128 AREFG

1000 Hours

Capt Loren L. Meddaugh

2000 Hours

Lt Col Arthur Thompson, Jr.
Maj Douglas E. Callaghan
Capt Carter A. Hall
TSgt Robert W. Derrick

3000 Hours

Maj James P. Longtine
Capt Bruce H. Swezey

4000 Hours

Maj John G. Cozad
Maj Lon M. Hansen
MSgt Richard H. Harvey

5000 Hours

Lt Col James D. Franken
Lt Col Robert G. Harshaw
Maj Gary W. Gloede

171 AREFW

1000 Hours

Capt James E. Shaffer
Capt Donald L. Wall

2000 Hours

Maj Thomas F. Roundtree
Capt Roy E. Uptegraff
TSgt Donald H. Y. Hendrix

3000 Hours

Maj Robert J. Blachley
Maj Charles F. Chapas
Maj Albert L. Rosenberg

4000 Hours

Maj Wayne A. Gallo
MSgt Anthony M. Trenga

5000 Hours

Maj Michael R. Goodman

305 AREFW

1000 Hours

Maj Ellen C. Ernst
Capt James M. Kelly
Capt Timothy L. Whitmire
Capt Daniel W. Smith
Capt James A. Ussery
Capt Joel K. Trammell
Capt Daniel C. Vick
Capt Frank A. Reale
Capt Glenn E. Richards, II
Capt Todd J. Pollard
Capt Christopher Gavin
Capt Martin C. Foye
Capt Frank Dinardo, Jr.
Capt William S. Davis
Capt Francis Cox
Capt William W. Lett
Capt Bruce P. Beller

2000 Hours

Maj Donald E. Ellis
Maj Benjamin J. Franklin
Maj William A. Slouffman
Maj Anthony F. Zdanuk, Jr.
Capt Kevin C. Ostrye
Capt James A. Dice

3000 Hours

Lt Col James G. Dickensheets
Lt Col Thomas D. Kreer

380 BMW

1000 Hours

Capt John P. Almind
Capt Rex F. Bailey
Capt Paul D. Carrubba
Capt Michael E. Hurley
Capt Edward P. Pernotto
Capt Essa C. Dabbikeh
Capt Daniel S. Eucker
Capt Richard M. Hotchkins, Jr.
Capt Jack W. Taylor

Sgt Philip Blaisse

2000 Hours

Lt Col John R. Landon
Maj Wallace B. O. Zane
Capt David G. Gibbs
Capt Matthew R. Leavitt

3000 Hours

Capt George Andino, Jr.
MSgt Vincent B. Ruck, Jr.

4000 Hours

TSgt Donald M. Fischer, Jr.

410 BMW

1000 Hours

Lt Col Leonard
Lt Col Bowling
Lt Col Horst
Lt Col Irwin
Lt Col Deming
Maj Rudisill
Maj Pitts
Maj Boone
Maj Bowie
Maj Sutton
Maj Vetere
Maj Terrall
Maj Glaubach
Maj Muckenthaler
Maj Kilbourn
Maj Campbell
Maj Foster
Maj Joy
Capt Hook
Capt Walters
Capt Reilly
Capt Deboer
Capt Gladback
Capt Rhodes
Capt Humphrey
Capt Kincaid
Capt Yarian
Capt Oetman
Capt Phillips
Capt Mershon
Capt Larson
Capt Hausmann
Capt McDowell
Capt Vick
Capt Stull
Capt Blain
Capt Brauner
Capt Aldridge
Capt Stepongzi
Capt Zech
Capt Cousler
Capt M. Andrews
Capt Woodward
Capt Peters
Capt Griffith
Capt Hall
Capt Romano
Capt Coehoorn
Capt Peifer
Capt Landry
Capt Quinn
Capt Nardi
Capt Peters
Capt Nowak
Capt Vanlear
Capt Daddio
Capt Zalenas
Capt Perhach
Capt Shybrow
Capt Sterner
Capt Stine
Capt Lione
Capt Suhay
Capt Smith
TSgt Durand
TSgt Pankonien
SSgt Zimmerly
SSgt Cermack
SSgt Davis
Sgt Glover
Sgt Tongusi
Sgt Smith
Sgt Levato

2000 Hours

Lt Col Boy
Maj Freeman
Maj Westmoreland
Maj Williamson
Maj Wallace
Capt Saxton
Capt Edge
Capt A. Williams
Capt Aclee
TSgt Watson
SSgt Delgado
SSgt Anielski
SSgt Woitas
SSgt Griffith

416 BMW

1000 Hours

Capt John M. Vlha
Capt Howard P. Duffy
Capt Shawn E. McManigell
Capt Richard B. Bamberger
Sgt David B. Shead

2000 Hours

Col Marc L. Drinkhahn
Maj Wesley A. Hewett
Maj Rene J. Beauregard
Capt John P. Healy
Capt Thomas T. Morgan
Capt Jeffrey W. Ray
Capt Jefferey J. Dingham
SSgt Joseph M. Thomas

PROFESSIONAL PERFORMERS

1Lt Philip K. Rogers and 2Lt Paul L. Bugenske

Missile Crew

Crew R-053, 90 SMW, Francis E. Warren AFB, consisting of 1Lt Philip K. Rogers, MCCC and 2Lt Paul L. Bugenske, DMCCC, is SAC's Missile Crew of the Month.

Crew R-053 handled an extremely difficult alert with sound professional competence. They began the alert at Foxtrot-01 launch control center (LCC) with four flight sorties off alert for modification. Shortly after assuming the alert at Foxtrot-01 they encountered the first of seven security alarms from a remote launch facility (LF). At this point, the crew started receiving abnormal indications from their weapon system computer. Their first indication something was wrong was a COMM ADVSD 30 print which told them the computer was sensing a problem with the command lines to the remote LFs. As the alert progressed other fault indications occurred including more COMM ADVSD prints and remote LFs momentarily reported as down (no contact). Crew R-053 coordinated with wing job control but could not correct the problems. Finally sortie H-09 reported as LF down and remained down long enough to require the crew to run the LF status out procedure. The status out procedure results were also abnormal and Lt Rogers quickly and correctly directed his LCC and the squadron into the inhibit/anti-jam emergency procedures in accordance with his tech data and weapon system safety rules. H-09 returned status upon squadron entry into the anti-jam mode, but the command lines to the LFs were now so flooded with data that multiple sorties in three flights began reporting LF down and clearing again. They also received multiple COMM ADVSD prints. Crew R-053 applied sound weapon system knowledge and determined the command lines had been flooded. They stayed in the anti-jam procedure until all sorties were reporting status and then coordinated a squadron exit from anti-jam.

Aircraft Maintenance

SSgt Kenneth Schueller, 509 BMW, Pease AFB, is SAC's Maintenance Airman of the Month.

Sgt Schueller has repeatedly proven his ability and value as a pneudraulics technician. When aircraft 56-3633 was experiencing a recurring problem with its boom signal system, he led the maintenance effort in rewiring the system. Though this repair is normally only accomplished at depot, Sgt Schueller's technical skill made possible the completion of this major effort only three days after depot approval of an organizational level repair. He again displayed his technical expertise on a major depot level overhaul of the boom assembly on aircraft 58-0083. His efforts insured the aircraft successfully participated in a local generation only one week after depot approved the local repair.

Sgt Schueller actively seeks ways to share his expertise and to increase the proficiency and knowledge of his fellow pneudraulics technicians. He established a sound and realistic training program for adjusting the boom ruddervator controls stick while the aircraft is flying. This program has significantly increased the skills of the branch pneudraulic specialists, and reduced inflight discrepancies by 70 percent.

Missile Maintenance

A1C Dean A. Singleton, periodic maintenance team launch control facility team member, 321 Field Missile Maintenance Squadron, Grand Forks AFB, is SAC's ICBM Maintenance Technician of the Month.

Amn Singleton continually strives to support the weapon system and gain valuable experience. He volunteered to install a 25 conductor cable for the new monitor and alarm system. This extra effort enabled technical engineering to stay ahead of the new LCF electrical surge arrestor modification program and reduced M&A installation time by 60 percent. Amn Singleton also volunteered to dispatch and assist in renovating the intake and exhaust air ducts and readjusting environmental controls. The LCF remained on alert during this extensive repair operation. Amn Singleton received an Air Force Achievement Medal for his efforts. Working on methods to improve maintenance, Amn Singleton made a portable bench stock kit for his team. This portable bench stock kit saves the team from going up and down the elevator to retrieve additional parts.

Munitions Maintenance

SrA William C. Ford, 380 BMW, Plattsburgh AFB, is SAC Munitions Airman of the Month.

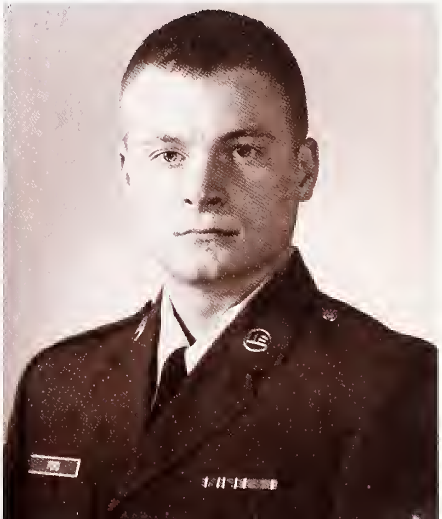
Assigned as a support equipment technician in the verification and checkout of equipment (VACE) section in the weapons storage area, SrA Ford calibrates, troubleshoots and repairs complex electronic test equipment used for diagnostic testing of the short range attack missile (SRAM) and the FB-111A. He also schedules and maintains over 120 pieces of test equipment requiring calibration and updates all associated documentation. Since his assignment to the VACE section over three years ago, he has sustained an unprecedented 100 percent pass rate on all evaluations; and even surpassed this achievement with an "Outstanding" rating for the calibration of an A/E-37A-5 printer set. SrA Ford's daily preflight, inspection and repair of critical SRAM test and support equipment yielded over 15 consecutive months of "Excellent" of higher rates in the maintenance standardization and evaluation program. Task evaluations, after-the-fact evaluations or in-process inspections are his forte.

SrA Ford, as an A1C, volunteered to integrate all periodic checkout procedures for the SRAM environmental control unit into the VACE task listing. After defining specific requirements, he embarked on an extremely diligent and extensive task preparation schedule, which allowed VACE personnel to expedite assumption of this maintenance responsibility. The overall outcome was a faster repair capability of the ECU, reduced downtime on the carrier aircraft equipment test station, and an expanded ability to improve and strengthen existing repair capabilities.

SSgt Kenneth Schueller

A1C Dean A. Singleton

SrA William C. Ford



Heads Up Flying Club

Heads Up Club Members (L-R): Capt Vernon B. Benton, Capt Robert H. Hendricks, Lt. Col Joseph G. Day, and Capt Jeffrey K. Beene.

Shortly after the completion of a low level training route, a 96 BMW B-1B lost the number two hydraulic system. This resulted in some flight control degradation, loss of normal gear extension, and reduced braking effectiveness. The Dyess AFB crew, consisting of Capt Jeffrey K. Beene, AC; Capt Vernon B. Benton, P; Capt Robert H. Hendricks, OSO; and Lt Col Joseph G. Day, IOSO, returned to base for the emergency landing but when the alternate gear extension was activated, the nose gear remained up and locked. The crew climbed back to altitude to work this new problem, but the main gear would now remain down for the duration of the flight, as there is no way to retract gear without the number two hydraulics.

The strip alert tanker was launched and a second tanker was readied. The crew took on 80,000 pounds of fuel, occasionally having to use afterburner to overcome the drag of the main gear. The crew now made several attempts to reset the alternate extend system and also made two touch and go landings in unsuccessful attempts to jar the nose gear loose. The decision was made to divert to Edwards AFB with a second tanker in preparation for a possible nose gear up landing, something never before attempted in the B-1. The structural and aerodynamic implications of a landing of this type were unknown.

During the flight to Edwards, the crew attempted to jumper cannon plug connections with safety wire and a paper clip in an attempt to bypass possible malfunctioning relays. When that procedure failed, the decision was made to go ahead with the nose gear up landing on the dry lake bed. The crew dumped fuel to reduce gross weight, swept the wings back to 20 degrees, and moved the center of gravity to the aft limit to keep as much weight off the nose as possible. After touchdown, the aircraft commander smoothly flew the nose onto the lake bed. The crew quickly shut down all four engines and allowed the aircraft to skid to a gentle stop.

The outstanding teamwork and airmanship demonstrated by this crew prevented a potential disaster and saved a valuable combat aircraft. **Well Done!**

SAC SAFETY SCREEN

The SAC Safety Screen is an honor roll of SAC's most professional crews. To gain listing on the Screen, crew members must be nominated by their unit commanders and meet high selection criteria of experience in their aircraft or missile system *IAW AFR 127-2/SS1.*

71 AREFS, Barksdale Crew R-125: MP Capt Thomas B Winslow, MC 1Lt Harper P Johnson, MN Capt Rita K Archer, MB A1C Charles W. McCoy

71 AREFS, Barksdale Crew E-131: MP Maj James K Stevens, Jr, MC 1Lt Hugh K Saint, IN Capt Antoinette M Tomaino, IB SSgt Ronald S Weeks

71 AREFS, Barksdale Crew R-133: MP Capt Eric J Furches, MC 1Lt Mark W Cantrell, MN 1Lt Robert L Maness, MB SrA Thomas A Morrison

20 BMS, Carswell Crew E-13: AC Capt Michael J Sadler, P 1Lt Todd C Westhauser, RN Capt William Rodriguez, N 1Lt Fletcher J Douglas, EW 1Lt James M Clardy, AG SSgt Robin A Baird

7 AREFS, Carswell Crew R-141: AC Capt Michael A Kolb, P Capt Mark A Hill, N 1Lt Stephen L Manspeaker, BO SrA Floyd W Atkins

46 BMS, Grand Forks Crew E-21: AC Capt Stephen L Wolborsky, P Capt Daniel S Moss, OSO Maj John R Kellam, DSO Capt Richard G Yule III

905 AREFS, Grand Forks Crew R-121: AC Capt Scott M Hanson, P Capt Paul D Hamilton, N 1Lt Jon Schilder, B A1C Darby J Twardoski

41 AREFS, Griffiss Crew R-115: AC Capt Frank Fabian, P Capt James Gortisan, N Capt Dean Allen, B SSgt Michael Hernandez

41 AREFS, Griffiss Crew R-119: AC Capt Brett Amelung, P 1Lt Matthew Mace, N Capt Michael Branck, B A1C Steven Ayers

668 BMS, Griffiss Crew E-13: AC Maj Robert McHale, P 1Lt Raffaele Monetti, RN Capt Joe McKeon, N 2Lt Mark Lulka, EW 1Lt Brian Hawke, G A1C Kurt Schmidt

92 AREFS, Fairchild Crew R-163: Capt Roger D Follis, 1Lt Paul R Wietbrock, 1Lt Mark A Tidwell, Amn Sheri L Paplham

71 AREFS, Barksdale Crew R-122: MP Capt Willard L Halsey, MC 1Lt Howard B Parham, MN 1Lt Timothy P Nalewaik, MB A1C Eduardo Elias

23 BMS, Minot Crew R-22: AC Capt Paul Mathis, P Lt Mark Lyons, RN Capt John Romero, N Lt Kevin Gardner, EW Capt Keene Tiedeman, G MSgt Robert Ethington

23 BMS, Minot Crew E-36: IP Capt Paul Berg, P Capt Michael Harvey, RN Capt Wallace Fajardo, N Lt James Pappas, EW Lt George Chappel, G SSgt Joseph Martinovich

23 BMS, Minot Crew E-41: AC Capt Tim Weiher, P Lt Tom Cantarano, RN Lt John Konopka, N Lt Andrew Wood, N Lt Todd Zachary, EW Lt Ed Miller, G SSgt Glynn Kovarik

906 AREFS, Minot Crews E-152/R-163/R-176: Capt Gordon R Burns, 1Lt Robert A Barkocy, Capt Douglas P Meador, SSgt Steven B Klinkhammer, Capt Christina V Evans, 1Lt Michael W Manion, Capt William V Cobern, A1C Jason L Graff, Capt Edward J Dieringer, 1Lt Edsun C Tung, 2Lt William D Pearson, and A1C Sean P Martin

307 AREFS, K I Sawyer Crew E-182: AC Capt Michael O Rafferty, CP 1Lt Dean A Westpfahl, N 1Lt Robert D Wilson, IBO Matthew P Glover

307 AREFS, K I Sawyer Crew R-181: AC Capt Stephen F Thomas, CP 1Lt Peter J Hoffmann, N 1Lt Brian H Howell, IBO SSgt Theodore N Johnson

307 AREFS, K I Sawyer Crew R-171: AC Capt Brian G Zalenas, CP 1Lt Kimberlei A Northrop, N 1Lt Daniel J McFeely, BO A1C Jenny L True

46 AREFS, K I Sawyer Crew S-130: AC Maj Frank Ross, P 1Lt Michael Hady, N 1Lt Joseph Schwartz, B TSgt Martin Kovar

509 AREFS, Pease Crew E-120: MP Maj Richard A Gowen, MC 1Lt Eric W Wilks, IN Capt

FLARE

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"It is better to be careful a hundred times than to get killed once."—*Mark Twain*